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Generaldirektion 2

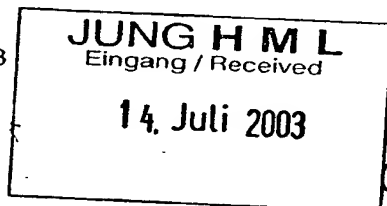
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Application No. 00 108 279.1-2111	Ref. X 920 C	Date 11.07.2003
Applicant Matsushita Electric Industrial Co., Ltd.		

**Communication pursuant to Article 96(2) EPC**

The examination of the above-identified application has revealed that it does not meet the requirements of the European Patent Convention for the reasons enclosed herewith. If the deficiencies indicated are not rectified the application may be refused pursuant to Article 97(1) EPC.

You are invited to file your observations and insofar as the deficiencies are such as to be rectifiable, to correct the indicated deficiencies within a period

of 4 months

from the notification of this communication, this period being computed in accordance with Rules 78(2) and 83(2) and (4) EPC.

One set of amendments to the description, claims and drawings is to be filed within the said period on separate sheets (Rule 36(1) EPC).

Failure to comply with this invitation in due time will result in the application being deemed to be withdrawn (Article 96(3) EPC).



HARF-BAPIN E I  
Primary Examiner  
for the Examining Division

Enclosure(s): 4 page/s reasons (Form 2906)  
US3387942, EP0002791, XP004271486, XP004184026. Total : 18 sheets.

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Sheet 1  
FeuilleAnmelde-Nr.:  
Application No.: 00 108 279.1  
Demande n°:

The examination is being carried out on the following application documents:

Text for the Contracting States:

DE FR GB

Description, pages:

1-34 as originally filed

Claims, No.:

1-9 as originally filed

Drawings, sheets:

1/2-2/2 as originally filed

The following documents (D) are cited by the examiner (see the Guidelines, C-VI, 8.9). Copies of the documents are annexed to the communication and the numbering will be adhered to in the rest of the procedure:

D1: US 3387942 A

D2: EP 0002791 A

D3: L. PIRAULT, M. GUERIN, F. MAIRE, P. MARECOT, J. BARBIER: 'Catalytic activity and EFA characterisation of three way automotive Pt-Rh/Al<sub>2</sub>O<sub>3</sub>-CeO<sub>2</sub> catalysts from different preparations', APPLIED CATALYSIS, , 1998, vol. A, no. 172, pages 249 to 258

D4: M. OZAWA: 'Role of cerium-zirconium mixed oxides as catalysts for car pollution: A short review', JOURNAL OF ALLOYS AND COMPOUNDS, , 1998, vol. 275-277, no. , pages 886 to 890

## 1. Inventive step

1.1 The present application does not meet the requirements of Article 52(1) EPC, because the subject-matter of claims 1-9 does not involve an inventive step in the sense of Article 56 EPC.



D1 which is regarded as the closest prior art discloses a shift converter used to purify the exit gases from a reformer. Said shift converter comprises a gas feeding part and a reaction chamber equipped with a water gas shift catalyst (D1, Figure 1, column 2, lines 21-40 and column 3, lines 23-36). The subject-matter of claim 1 differs from D1 in that the water gas shift catalyst body comprises a carrier composed of at least one metal oxide having a BET specific surface area of 10 m<sup>2</sup>/g or more and Pt supported thereon.

In view of the description and of the prior art, the problem to be solved by the subject-matter of claim 1 may therefore be regarded as the provision of a shift converter equipped with a catalyst capable of undergoing frequent startup and shutdown phases without significant damages due to introduction of oxygen or high temperatures.

D2 discloses the use of:

- a) Pt supported on ZSM-5 type zeolite and of
- b) Pt supported, with Pd, on  $\gamma$ -Al<sub>2</sub>O<sub>3</sub>

in the conversion of carbon monoxide to carbon dioxide and hydrogen in gas streams such as exhaust gases and shows that said catalysts, and especially the first one, exhibit a "significant activity" as water gas shift catalysts (see D2, page 2, lines 1-10; page 3, lines 13-33 and example 1) even in the presence of oxygen.

Moreover, it is well-known for the person skilled in the art that the BET specific surfaces of ZSM-5 and of  $\gamma$ -Al<sub>2</sub>O<sub>3</sub> are higher than 10 m<sup>2</sup>/g.

It would therefore have been obvious for the person skilled in the art to include the water gas shift catalyst of type a (of type b, respectively) of D2 in the shift converter disclosed in D1, in order to solve the problem posed.

Hence claim 1 cannot be regarded as involving an inventive step (Articles 52(1) and 56 EPC).

- 1.2 Dependent claims 2-6 do not appear to contain any additional features which, in combination with the features of any claim to which they refer, meet the requirements

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of the EPC (Articles 52(1) and 56 EPC) with respect to inventive step for the following reasons:

- claim 2: the person skilled in the art knows that the specific surface area of  $\gamma\text{-Al}_2\text{O}_3$ , for example, is lower than  $250\text{ m}^2/\text{g}$  and that it can be lower than or equal to  $250\text{ m}^2/\text{g}$  for ZSM-5. As no unexpected properties are indicated in the application for the apparatus of claim 1 in relation to devices equipped with catalyst carriers in the rest of the range, the subject-matter of claim 2 cannot be regarded as inventive.
- claim 4: according to D3, the addition of ceria to the support  $\gamma\text{-Al}_2\text{O}_3$  in a  $\text{Pt}/\gamma\text{-Al}_2\text{O}_3$  catalyst is beneficial for its stability and enhances its activity for the water gas shift reaction (see D3, page 249, right-hand column, lines 1-6).
- claim 5: D4 shows the efficiency of Ce-Zr mixed oxide in the removal of CO from exhaust gas and suggest (see page 889, paragraph 2.6) their use as catalysts for water gas shift reactions.

- 1.3 The apparatus disclosed in claim 1 is not inventive for the reasons disclosed in paragraph 1.1. The method for operating said apparatus disclosed in claim 7 is not inventive (Article 56 EPC) either because it is common practice and therefore obvious for the person skilled in the art to control the temperature of the water gas shifting catalyst so that it stays within the range of catalytical activity. Said activity depends on the catalyst: for catalysts like  $\text{Pt}/\text{ZSM-5}$ , it corresponds to temperatures between  $200$  and  $800^\circ\text{C}$  (see D2, page 8, lines 5-8).

Dependent claims 8 and 9 do not appear to contain any additional features which, in combination with the features of claim 7 to which they refer, meet the requirements of the EPC with respect to inventive step because said additional features come within the scope of the customary practice followed by persons skilled in the art and the advantages thus achieved can be readily contemplated in advance.

## 2. Clarity

- 2.1 Claim 6 is not supported by the description as required by Article 84 EPC: the description on page 17, lines 15-17 indicates, as far as it can be understood, that Pd, Rh or Ru are added in an amount ranging from 5 to 10%, based on the weight of Pt while claims 7 discloses the range between 0.1 and 0.5%. Moreover table 5 on page



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31 gives Pd, Rh and Ru concentrations ranging from 8 to 60%.

2.2 The applicant is asked to revise the application and especially the description to bring them into agreement with normal English usages.

### 3. Miscellaneous

It is not at present apparent which part of the application could serve as a basis for a new, allowable claim. Should the applicant nevertheless regard some particular matter as patentable, an independent claim should be filed taking account of Rule 29(1) EPC. The applicant should also indicate in the letter of reply the difference of the subject-matter of the new claim vis-à-vis the state of the art and the significance thereof.

When filing amended claims the applicant should at the same time bring the description into conformity with the amended claims. Care should be taken during revision, especially of the introductory portion and any statements of problem or advantage, not to add subject-matter which extends beyond the content of the application as originally filed (Article 123(2) EPC).

In order to facilitate the examination of the conformity of the amended application with the requirements of Article 123(2) EPC, the applicant is requested to clearly identify the amendments carried out, irrespective of whether they concern amendments by addition, replacement or deletion, and to indicate the passages of the application as filed on which these amendments are based.

If the applicant regards it as appropriate these indications could be submitted in handwritten form on a copy of the relevant parts of the application as filed.